Impact of shifting cultivation on land cover changes in a Karen Village in the Bago Mountains, Myanmar

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1. Introduction

In the Bago Mountains of Myanmar, the government established a Karen Area in which Karen people are allowed to conduct shifting cultivation freely. In the study area, the inhabitants of village K, of the Karen Area located in the Kabaung Reserved Forest, have practiced rotational shifting cultivation since colonial times. This study examined the impact of shifting cultivation practices on the land cover changes of village K.

2. Materials and Methods

Shifting cultivation plots for 2005 and 2006 were mapped using the global positioning system (GPS), and past shifting cultivation plots (1989 - 2002) were extracted from satellite images using the normalized difference vegetation index (NDVI) as an indicator. The land cover in village K in 1989, 2000, and 2003 was analyzed using the supervised classification method, using Landsat images. Then, the shifting cultivation plots were overlaid on the land cover maps to determine the impact of shifting cultivation.

3. Results and Discussion

For 2005 and 2006, 40 and 46 shifting cultivation plots (97 and 100 ha), respectively, were mapped using GPS. From 1989 to 2002, 29 to 34 plots (46 to 93 ha) were extracted from satellite images.

In the shifting cultivation plots, the vegetation recovery process is from Bare & Grass (BG) land to Degraded Forest (Bamboo) (DF), and then to Dense Forest. To calculate the forest recovery rate of the shifting cultivation plots, the shifting cultivation plots for 1989 - 2000 were overlaid on the 2000 image. As shown in Fig. 1, dense forest areas increased gradually with time and recovered to 64% within 7 years. In 11th year fallow, some BG appeared, due to slashing and burning, and dense forest area decreased.

As shown in Fig. 2, dense forest area decreased from 3,101 ha in 1989 to 2,429 ha in 2000, while degraded forest increased from 434 ha in 1989 to 1,048 ha in 2000. As dense forest area decreased, degraded forest with bamboo supported the rotational shifting cultivation of the villagers.

Fig. 1 Land cover of fallow plots in 2000

Fig. 2. Land cover change in 1989, 2000, and 2003

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